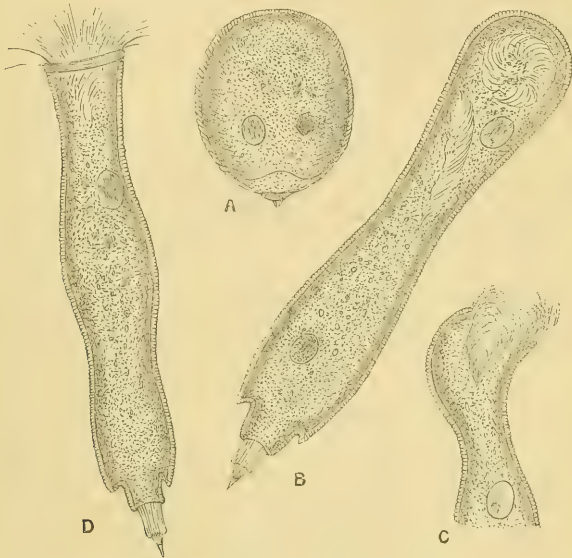


GERDA CAUDATA, n. sp.

Body elongate, cylindrically-undulate, seven times as long as broad, transversely striate, highly contractile, spherically-ovate when contracted, terminating posteriorly in an imbricated longitudinally striated tail-like appendage; ciliary disk convex; peristome-border thick; contractile vesicle spherical, anteriorly placed; endoplast spherical and conspicuous.—*Hab.* Pond-water.



Gerda caudata in different stages and positions. A. Retracted state. B. Extended, but with cilia withdrawn. C. Showing gradual eversion of cilia. D. Fully expanded.

On Japan Brenthidæ, and Notes of their Habits.

By GEORGE LEWIS, F.L.S.

[Read June 7, 1883.]

(PLATE XII.)

THE new Brenthidæ made known in this paper are those I acquired in Japan during the summers of 1880 and 1881, and comprise five species. The Japanese archipelago lies too far north of the equator to be rich in species of the family, yet still, in the southern island of Kiushiu and in the warm peninsula which borders on the Kii Channel, a fair number of beetles of a truly tropical type exist; and to this class the Brenthidæ noted

here indubitably belong. The fact that each genus is represented by only one species is significant, and tends to show that although a few members of the family are sufficiently plastic to accommodate themselves to the climate and the other local surroundings between lat. 31° and 34°, yet there is nevertheless some physical check, which reduces their vital capital, and puts an end to that production of surplus power which would arise in a more southern climate, and, arising, would lead to further specific differentiation. There is no geographical line or barrier sufficient to exclude tropical forms from Japan; but their environment, when they reach it, prevents them from establishing themselves to any great extent; and in the southern island this is, as we should conceive, first felt in the effects of winter, rather than in those of summer, for it is to the colder period of the year we can at first trace the chief deterrent influences.

I am indebted to Mons. G. Power for his kindness to me in indicating the position of one or more of the genera; and the notes I have inserted in the text, showing the near allies of the species, are extracted from one of his letters.

1. *ZEMIOSES CELTIS*, n. sp. (Plate XII. figs. 1, 7, 8.)

Nitidus, robustus, rufo-ferrugineus, conspicue minus sparsim hirtellus; elytris profunde striatis, striis fere esculpturatis; rostro brevissimo.

Robust, shining concolorous, clothed with long yellow-grey hairs; thorax with scattered irregular shallow punctures and a median furrow wide on the disk. The elytral striæ are broad, flat on the surface, and lightly impressed with punctures; the humeral angle is smooth. In some examples the apex of each antennal joint is piceous. Length with rostrum 3-3½ lines.

I have compared this species with Mr. Pascoe's *porcatus*, but it is not specifically allied to it. *Sebasius Deyrollei*, Lacord., is a *Zemioses*, M. Power taking *Sebasius* for those species in which the thighs go beyond the abdomen, as in *cancellatus*.

I took this species on a large *Celtis* growing on the banks of the Kumagawa, at Hitoyoshi. Specimens were passing in and out of the small holes made by *Ptinus* or *Platypus*, in a barkless portion of the tree, after the manner of the Histeridæ, *Tryponæus* and *Teretrius*, when searching for larvæ of wood-borers. When in the holes it was not possible to get at them, for though seen in the orifices, they retired when disturbed 6 or 8 inches into

the tree. A child set to watch for two days collected about a dozen specimens; and later on, solitary examples were obtained in various places in Higo. This species is formed for traversing the perforations of wood-borers, but not to the same degree of eccentricity shown in the next genus, *Cyphagogus*.

2. *CYPHAGOGUS SIGNIPES*, n. sp. (Plate XII. figs. 2, 3, 4.)

Nigro-piceus, parcius tenuiterque hirtellus, rostro apice rufo, thorace lævi parce et grosse punctato, antennis lateraliter compressis; elytris profunde striatis, striis fortiter profundeque punctatis.

Pitchy black; head and thorax smooth and shining, latter with large shallow scattered punctures; neck and rostrum from behind the antennæ red; thorax and elytra are clothed with a few long grey hairs; elytra with smooth costate striæ, interstices rather deeply punctate; the humeral angle is smooth. Length $2\frac{3}{4}$ - $3\frac{3}{4}$ lines.

This species is nearest to *C. Erichsoni*, Kirsch, which it resembles in having the first article of the hind tarsus long. This character completely separates it from *C. Whitei*, Westwood, *Westwoodi*, Parry, and *planifrons*, Kirsch.

I obtained this species in two provinces, Higo and Yamato; but, like the *Zemioses*, it was difficult to capture. In warm weather, in May and June, it may be seen slowly pacing its way over the trunks of trees with its legs widening out from the body, and the thighs moving freely as the insect walks. But this is not its usual position; it is then only shifting its quarters. The holes pierced 6 or 8 inches into the trees by small wood-borers are its chief resort; and for these cylindrical galleries they are most admirably suited, by their exceptional structure. The adaptation exhibited in this genus to a special mode of life is wonderful, and seems to point to structural modifications subsequent to, and more important than, that of the primitive *Platypi*. The anterior femora are raised up by the insect treading on the sides of the perforated passages, and thus pressed into the excavation in the fore part of the thorax, which the bulbiform part exactly occupies: the middle femora, similarly raised, fit, though indifferently, into the space between the thorax and the elytra; and the hind legs are stretched out behind, bringing the swollen part of the thigh beyond the elytra. In this position the *short* tibiæ, in the hind legs not longer than the two basal

joints of the tarsus, are brought into play, while the femora are kept almost stationary, and *Cyphagogus* is enabled to enter, pass freely through, and explore the confined recesses of galleries made in hard wood by borers of no bigger girth, but of more perfect cylindricality, than themselves. Yet, on account of their elongate limbs, one might suppose, without the evidence of direct observation, that such a feat were impossible. The first and second pair of tibiæ are longer in proportion to the tarsi than the hind pair; and an examination of the insect and a reference to their habits will reveal the necessity of this structure. Look at *Calodromus Mellyi*, Guér., figured by Westwood in the 'Cabinet of Oriental Entomology,' and see what happens in an insect of these habits when the tibiæ are long. When in the confined galleries of wood-borers, the hind tibiæ of *Calodromus* cannot serve as the means of locomotion, and their apparent use seems to be to act as a mere receptacle for surplus tissue. Even when shifting its quarters, the long, flattened-out, eccentrically formed tibiæ cannot assist its movements. Owing to a knowledge of these habits of *Cyphagogus*, I took three species afterwards in Ceylon: one is very remarkable as being of a pale testaceous colour. The legs of this and *Zemioses* are delineated to show their singular form; but no drawings could be adequate for the purpose of showing their position in the trees.

3. *JONTHOCERUS NIGRIPES*, n. sp. (Plate XII. fig. 5, ♂; 6, ♀.)

Rufus, subnitidus, subdepressus, antennis pedibusque nigropiceis illis nigro-pilosis; elytris striatis, secundo, tertio quartoque suturali longitudinaliter depressis; subtus obscurus.

Red, smooth, and rather shining; rostrum, head, and thorax with a median furrow; antennæ and legs nearly black, former clothed with black hairs. Elytra striate, 2nd, 3rd, 4th depressed; interstices obscurely punctate. Beneath, its colour is nearly as dark as the legs. Length 3-4 lines.

♂. Antennæ slender, nearly as long as the body; eyes full, and nearly touching in front.

♀. Antennæ robust, a little longer than the head and thorax; eyes moderate, and not encroaching on the region of the head as in the male.

This species lives under bark in the same way as *Brontes* and *Dendrophagus*; the legs when at rest are kept close to the body, and the antennæ are stretched out in front and lie in a

parallel position touching each other. I took about 20 specimens on the 1st May 1881 under the bark of a fallen beech, within a space I could cover with two hands. They were under rather dry bark; and in the moister parts of the same tree I found *Syntelia* and numbers of the flat bark Histeridæ. The tree was shaded by large overhanging camelias, and had been blown down by a typhoon about two years previously. I found on this occasion more females than males; but as summer came on specimens occurred commonly in Higo, and the sexes were then in proportionate numbers. The female of this genus has been hitherto rare in collections of Brenthidæ.

This genus extends to Zanzibar. I have taken it at Saigon, Penang, Singapore, and in Ceylon, and it is extremely abundant in all these places. *J. nigripes* is somewhat like *crematus*, Lacord., and *ophthalmicus*, Pascoe.

HIGONIUS, n. gen.

Head rather large, deeply furrowed in the middle; sides rough and greatly elevated, forming over the eyes, when viewed sideways, eyebrow-like excrescences. Eyes moderate, round, visible from above; neck smooth and not conspicuous. Antennæ robust; 1st joint oval, 2nd shorter and round, 3rd rather smaller at the base, 4th to 8th short and equal, 9th and 10th larger and oval; terminal conical, and nearly as long as the 9th and 10th together. Rostrum smooth in front of the antennæ, rough, uneven, and furrowed at base. Thorax convex, smooth, rather narrowed in front, with a median furrow. Elytra subparallel, truncate at the apex, sutural and third stria much raised before the apex; striæ broad and convex; interstices feebly punctate. Legs moderate and robust.

There is apparently no difference in the form of the sexes. This genus may be placed near *Cerobates*, and the species in it probably extend over a great part of equinoctial Asia. Mons. Power has it from Penang, where I have myself taken it near the well-known waterfall; and it is with a feeling of obligation that I have named the species after him*.

* The species I took in the island of Penang I briefly characterize as *H. Poweri*, n. sp. It is very distinct from *H. cilo*, and differs in being less than half the size, surface more opaque, thorax with five, equidistant, longitudinal furrows, and the anterior femora are without a tooth. The

4. *HIGONIUS CILO*, n. sp. (Plate XII. figs. 9, 10.

Rufo-testaceus, thorace peropaco, in medio canaliculato; elytris profunde sulcatis, primo fere obsoleto, ceteris fortiter elevatis, secundo ad apicem ducto, dorso nigro-maculato; corpore subtus rufo nigroque variegato.

Testaceous, very opaque; thorax divided in the middle by a deep furrow, the disk on either side being dark or discoloured; the elytra are broadly and convexly striate, with interstices punctate. In the dorsal region there is a dusky or black spot on each elytron near the suture. Legs robust, each thigh with a large tooth. Length $2-2\frac{1}{2}$ lines.

This species is the largest of the genus at present known. It occurs not uncommonly under bark in the forests of Higo; and I have used the name of the province in forming the generic name.

5. *BARYRRHYNCHUS POWERI*, *Roelofs*, *C. R. Ent. Belg.* xxii. p. 65. (Plate XII. fig. 11, ♂.)

This species is allied, though not very closely, to *B. Miles*, Bohem., from the Himalaya mountains. Mons. Hiller first discovered it at Hagi, and I subsequently found it not uncommonly under bark in May in the forests of Yuyama in Higo. In June 1881 I chanced to beat a single male at Nara off a young tree.

thoracic grooves are peculiar, and occur in no other genus in the family. Mr. A. S. Oliff has described a species from the Andamans, also with the five grooves, viz. *Higonius crux*.

Description of a new species of Higonius. By A. SIDNEY OLIFF.

HIGONIUS CRUX, n. sp.—Elongatus, rufo-castaneus, convexiusculus. Antennæ piceæ. Prothorax antice valde attenuatus, margine antico nigro, fortiter longitudinaliter quadricarinatus. Elytra prothorace plus quam duplo longiora, postice parum angustata; ad basin, suturâ maculâque transversâ communi pone medium nigris; quadricarinata interstitiis sat latis lævibus. Corpus subtus nitidum, læve; abdominis segmentis nigris. Pedes rufo-brunnei. Long. $3\frac{1}{2}$ millim.

Hab. South Andaman Islands.

Allied to *Higonius Poweri*, Lewis, but certainly distinct. It is larger, proportionately broader, more brightly coloured, and has the ridges on the elytra more clearly defined.

6. *ORYCHODES INSIGNIS*, n. sp. (Plate XII. fig. 12.)

Piceus, nitidus, capite prothoraceque impunctatis; elytris costatis, sulcis regulariter grosse punctatis, signaturis flavis ad basim, ultra medium et ad apicem.

Pitchy red, shining; rostrum, antennæ, and legs somewhat paler; head and thorax smooth and impunctate, elytral striæ costate and smooth; interstices deeply impressed with single punctures, the spaces intervening between each being smooth and equal to that occupied by the puncture. The 4th stria near the base has a yellow mark covering a space equal to three punctures, the 5th a basal spot equal to two punctures; the 8th and 9th are yellow before the middle; a dorsal fascia occupies part of the 3rd, 4th, 5th, and an antepical spot follows on 3rd and 9th. The maculation scarcely ever varies, but sometimes the 5th basal spot is absent. The ♂ has the rostrum in front of antennæ canaliculate; ♀ smooth. Size variable, $3\frac{1}{2}$ – $8\frac{1}{2}$ lines.

This species, with some eastern congeners not yet described, may ultimately require a new genus for its reception. It agrees with *O. pictus*, Pascoe, and *lineolatus*, Kirsch, as regards the head and eyes, but the elytra are more like certain species of *Rhaphidorrhynchus*.

Common throughout Dai Nipon, including Sado. I do not know much of its habits; specimens were usually taken crawling over the bark of trees, or beaten, during the hottest part of summer, off saplings; and in the latter way I found it abundantly in South Yezo in August. In this and no. 5 there is no special modification in the structure of the legs; but I am inclined to believe that they often resort to, and hibernate or rest in, the larger perforations of insects such as *Longicornia*, or under bark of trees well loosened—spaces, that is, to which they can have easy access without special adaptation. I found, at all events, the allied genus *Arrhenodes* in Ceylon in this position, resting under large pieces of bark which came off easily in the hand. The form of *Bolbogaster ctenostomoides*, Lacord., a very interesting species of Brenthidæ, seems to proclaim its predilection for narrow galleries, as the elytra and abdomen below the humeral angle deviate from the usual parallel line in these insects sufficiently to receive the bulbiform apex of both the middle and posterior femora. I have seen a specimen in Mr. Pascoe's collection; and would call the special attention of any one studying the habits of this interesting group to it.

Trachelizus bisulcatus, Lund, Mons. Power informs me, is common in the extreme East, and that specimens have been reported from China and Japan. In the Munich Catalogue the locality given is Java; and I hesitate at present to include it in the Japan list.

EXPLANATION OF PLATE XII.

- Fig. 1. *Zemioses celtis*, Lewis.
 2. *Cyphagogus signipes*, Lewis.
 3. Ditto, femur from above. 4. Leg, side view.
 5. *Jonthocerus nigripes*, Lewis, ♂. 6. Ditto, ♀.
 7. *Zemioses celtis*, femur from above. 8. Leg, side view.
 9. *Higonius cilo*, Lewis. 10. Side view of head.
 11. *Baryrrhynchus Poweri*, Roelofs, ♂.
 12. *Orychodes insignis*, Lewis, ♂.

On the Structure of the Hard Parts of the Fungidæ.—Part II.
 Lophoserinæ. By Prof. P. MARTIN DUNCAN, F.R.S., F.L.S., &c.

[Read June 21, 1883.]

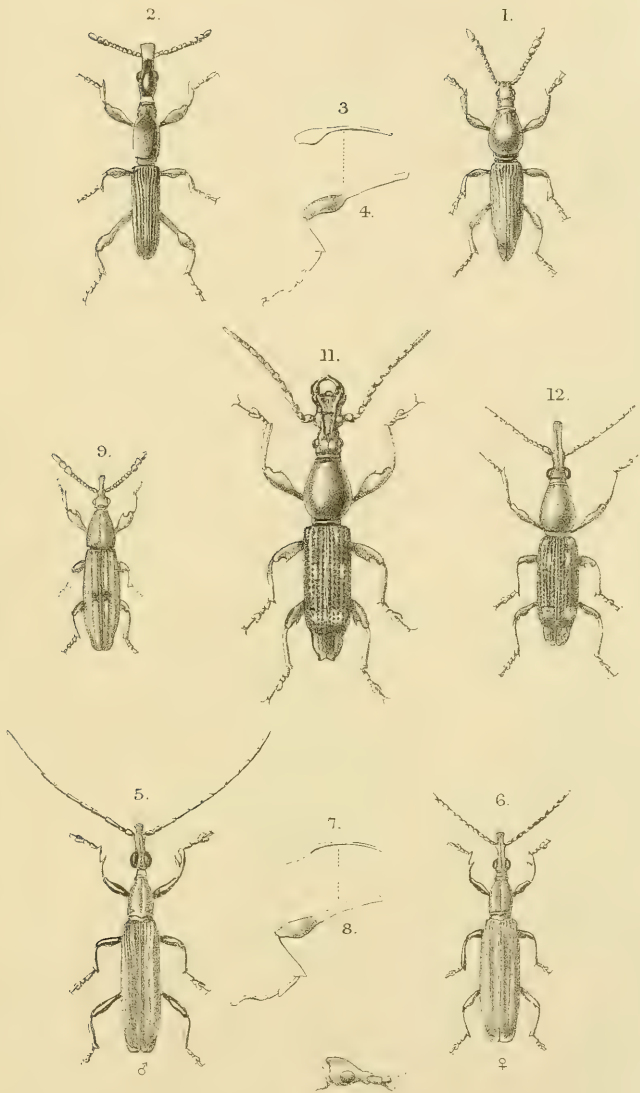
(PLATE XIII.)

CONTENTS.—I. Introduction: the Subfamily Lophoserinæ.—II. Genus *Lophoseris*, its Diagnosis and Details of Species.—III. Genus *Mæandroseris* and its necessary Division: Generic Diagnosis of *Plesioseris*.—IV. The Structure of the Genus *Pachyseris*.—V. The Structure of *Coscinaræa meandrina* and its Zoological Position.—VI. Remarks on the Anatomy of *Siderastræa*, *Merulina*, and *Echinopora*.—VII. Remarks and Considerations regarding Classification.

I. *Introduction*.—The former communication on the structure of the sclerenchyma of the Fungidæ related to the subfamily Funginæ; the present concerns the structural details of some of the compound corals belonging to several of the recent genera of the subfamily Lophoserinæ.

An examination of the recent Lophoserinæ is absolutely requisite before the classificatory position of many extinct genera of corals can be decided. Hence the examples chosen to illustrate this communication have a palæontological bearing; but I do not enter into the subject of the construction of the forms included in such genera as *Comoseris*, *Oroseris*, *Thamnastræa*, &c., because it belongs more to the province of the Geological Society; and this essay is introductory to such a one.

Very soon after this communication was commenced, I became aware that the internal structures of the compound Lophoserinæ



E. Wilson del. et lith.

Mintern Bros. imp.

JAPANESE BRENTHIDÆ.